

Serial No. 10/580,802  
Attorney Docket No. 102613-112

### REMARKS

By this amendment, claim 1 and 3 have been amended to recite that the composition contains, inter alia, 2 to 20 wt % of at least a self-crosslinkable resin and 75 to 97 wt% of water. Support for the amendment may be found at page 2, lines 34, 35, as well as page 3, lines 4 and 5 of the original application.

In addition, claims 1 and 3 have been amended to specify that the catalyst is selected from the group consisting of MgCl<sub>2</sub>, ammonium chloride, ammonium sulphate, ammonium salt of formic acid, ammonium salt of boric acid, ammonium salt of phosphoric acid, ammonium salt of oxalid acid, and combinations thereof. Support for this amendment can be found at page 5, lines 4-9 of the original application.

Further, claims 1 and 3 have been amended to specify that the antimicrobial agent is selected from the group consisting of quaternary ammonium salts, biguanides, monoguanides, and combinations thereof. Support for this amendment may be found at page 5, lines 22-24 of the originally filed application.

Claims 11, 17, 18, 23 and 24 have been amended to more clearly recite the claimed invention.

Claims 19 and 21 have been amended to specify that the self-crosslinkable resin is a formaldehyde condensate with urea or melamine; and the antimicrobial active agent is selected from the group consisting of quaternary ammonium salts, biguanides, monoguanides, and combinations thereof. The amended claims 19 and 21 are supported by the disclosure at page 3, lines 14-17 as well as the disclosure at page 5, lines 22-24 of the original application.

Claims 9, 10, 25 and 26 have been cancelled without prejudice.

Claim 27 is newly added.

After entry of the amendments, claims 1-8, 11-24 and 27 are pending for further examination. Applicants submit that no new matter is added herein.

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**Claim Rejections – 35 USC 112**

Claims 25-26 are rejected as being indefinite for the reason that these two claims only recite a use without any active, positive steps delimiting how this use is actually practiced. In addition, claims 25 and 26 are rejected under 35 USC 101.

By this amendment, claims 25 and 26 have been cancelled thus rendering the rejections moot.

**Claim Rejections under 35 USC § 103**

**1. Payne et al. (US 5,700,742)**

Claims 1-7 and 9-26 are rejected under 35 U.S.C. 103 as allegedly being obvious over Payne et al. (U.S. Patent No. 5,700,742). Applicants respectfully traverse the rejection.

Claims 9, 10, 25 and 26 have been cancelled, thus rendering the rejections as applied to these claims moot.

Instant claims 1-7, 11, 12 and 27 are directed to a composition for inhibiting the growth of microorganisms on non-cellulosic fibres having a moisture regain of  $\leq 5\%$  and/or having an acid value of  $\leq 5$  mmol/kg. The composition contains: 1) 2-20 wt% of at least a self-crosslinkable resin; 2) 0.25-20 wt% of at least a catalyst; 3) 0.1-4 wt% of at least an antimicrobial active agent, *reactive with the resin*; and 75-97 wt% of water; wherein 1) + 2) + 3) + 4) = 100%.

As discussed in the background portion of the application, it is known to immobilize antimicrobial active agents such as poly(hexamethylene biguanide), onto cellulosic fibres having carboxylic acid functional groups or textiles having hydroxyl functionality by means of ionic bonding or covalent crosslinking between the fibre or the textiles and the antimicrobial active agent. See page 1, paragraphs 2 and 3.

However, when non-cellulosic fibres having very few or no active hydrogens are treated with antimicrobial active agents, there is no durability to laundering or rinsing due to the lack of bonding between the active agents and the fibres. See page 1, paragraph 5 of the specification.

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Applicants surprisingly found that it is possible to immobilize antimicrobial active agents onto non-cellulosic fibres with very few or no active hydrogens *by means of self-crosslinkable resins*. See page 1, paragraph 5 of the specification. More specifically, the antimicrobial agent and the self-crosslinkable resin of the instantly claimed invention are selected in such a way that they react with each other. Accordingly, the antimicrobial agent is immobilized onto the non-cellulosic fibres through the bonding between the self-crosslinkable resin and the antimicrobial agent.

Although it is difficult to measure the concentration of active hydrogens on a fibre, a closely related property, the degree of hydrophilicity of a fibre can be defined by acid value or the moisture regain of the fibre. Instant claims 1-7, 11, 12 and 27 recite compositions for inhibiting the growth of microorganism on such fibres. Experimental data shown at page 18, table 3 demonstrate that non-cellulosic fibres treated with the composition of the invention have improved durability compared with the same materials treated with a composition that do not contain any self-crosslinkable resin.

In contrast to the instantly claimed invention, US Patent '742 relates to the treatment of textile materials with biguanide and a strong organic acid having a pK value below 4.5. See Abstract. According to patent '742, the biguanide is applied to the textile material before the strong organic acid is applied. See column 6, lines 8 and 9. The patentee discloses that at least some of the biguanide groups of the antimicrobial active bind with the textile material; and those not required to bind with the textile are blocked by the strong organic acid, i.e., forming a salt of the biguanide and the acid. See column 6, line 36-43. Accordingly, there would not be any biguanide groups left to react with chlorine contained in many commercial detergents, thus protecting the biguanide treated materials against yellowing and the loss of antimicrobial activity associated with the reaction between the biguanide and the chlorine. See column 1, lines 20-23.

Patent '742 does not disclose or suggest any four-component composition as recited in instant claims 1-7, 11, 12 and 27. Applicants note that the reference discloses an aqueous composition containing 1% melamine resin (table 6 as well as column 9, lines 44-46), 0.1% aqueous solution of PHMB (examples 1-17, column 7, line 6) and 1% aqueous solution of a strong organic acid (Table 1) individually. However, Applicants respectfully submit that patent

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'742 does not disclose or suggest any aqueous composition containing all three of the components: melamine resin, PHMB and a strong organic acid.

Indeed, patent '742 implicitly teaches away from mixing biguanide and organic acid and then applying the mixture to the textile material. In fact, the reference discloses sequentially applying a first composition containing biguanide and a second composition containing organic acid to the textile material. As disclosed at column 6, lines 8 and 9, the biguanide is preferably applied to the textile material before the strong organic acid is applied. In addition, all the examples in the reference disclose that the textile material was first immersed in an aqueous solution of PHMB, then the material was removed, rinsed with water and immersed in an aqueous solution of a strong organic acid. See examples 1-25.

Further, even if one skilled in the art did combine biguanide, organic aid and melamine into one composition, Applicants submit that he would not, the obtained composition does not disclose or suggest the instantly claimed composition because 1) the obtained composition would contain 1% of resin, which falls outside of the claimed range of 2-20 wt%; and 2) the obtained composition would not contain a catalyst as recited in instant claims 1, 3 and the claims depending therefrom. Accordingly, patent '742 does not disclose or suggest the compositions as recited in claims 1-8, 11, 12 and 27.

Instant claims 13-18 are directed to a method for inhibiting the growth of microorganisms on non-cellulosic fibres having a moisture regain of  $\leq 5\%$  or having an acid value of  $\leq 5$  mmol/kg by using the instantly claimed composition.

Since patent '742 does not disclose or suggest the compositions as recited in claims 1 and 3 for the reasons discussed above, the reference does not disclose or suggest any method for using these compositions, much less those as recited in instant claims 13-18.

Instant claims 19-24 are directed to non-cellulosic fibres having a moisture regain of  $\leq 5\%$  and/or having an acid value of  $\leq 5$  mmol/kg comprising: 1-10 wt% by weight of the non-cellulosic fibres of at least a self-crosslinkable resin being a formaldehyde condensate with urea or melamine; and 0.1 to 1 wt% by weight of the non-cellulosic fibres of at least an antimicrobial active agent selected from a Markush group, *reacted with the resin*.

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Patent '742 fails to disclose or suggest the use of formaldehyde condensate with urea or melamine for any purposes. Accordingly the reference does not disclose or suggest any fibres comprising such resins, much less the non-cellulosic fibres as recited in the instantly claims 19-24. For the above reasons, the 103 rejection based on patent '742 as applied to claims 1-7, 9-26 are untenable and should be withdrawn.

**2. Payne (US 5,700,742) in view of North (US 5,352,372)**

Claim 8 is rejected under 35 USC 103(a) as being obvious over Payne et al. as applied to claims 1-7 and 9-26, and further in view of North (US 5,352,372).

Claim 8 is directed to a composition indirectly depends from claim 1 where the self-crosslinkable resin is selected from dimethyloldihydroxyethylene urea and dihydroxydimethylene urea.

Payne et al. has been discussed above in the context of 103 rejection based on this reference alone.

North discloses a composition for treating textile fabrics which reduces or eliminates free formaldehyde in the resin and the treated fabric which providing a non-yellowing treated fabric comprising DMDHEU or alkylated DMDHEU and dimethyl acetoacetamide.

Applicants submit that there is no motivation to combine Payne et al. and North. Further, the combination of Payne et al. and North does not disclose or suggest the composition as recited in instant claim 8. Rather the combination would disclose three different compositions, one containing 1% DMDHEU or alkylated DMDHEU and dimethyl acetoacetamide, one containing 0.1% aqueous solution of PHMB, and one containing 1% aqueous solution of a strong organic acid. The combination would disclose sequentially treating fabrics with each of these compositions. None of these compositions are suggestive of the one as instantly claimed. Accordingly, the rejection is untenable and should be withdrawn.

It is believed that the instant claims are now in condition for allowance. Accordingly, an early receipt of a Notice of Allowance is respectfully requested.

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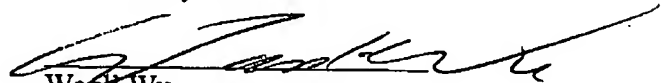
If the Examiner has any questions or believes that a discussion with Applicants' attorney would expedite prosecution, the Examiner is invited and encouraged to contact the undersigned at the telephone number below.

Please apply any credits or charge any deficiencies to our Deposit Account No. 23-1665.

Respectfully submitted,  
John D. Payne et al.

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WIGGIN and DANA LLP  
One Century Tower  
New Haven, CT 06508-1832  
Telephone: (203) 498-4317  
Facsimile: (203) 782-288  
wwu@wiggin.com

  
Warrin Wu  
Reg. No. 59,045

12800\601\2274534.1